

UNITED STATES PATENT AND TRADEMARK OFFICE  
**CERTIFICATE OF CORRECTION**

PATENT NO. : 7,103,015 B1  
APPLICATION NO. : 09/517417  
DATED : September 5, 2006  
INVENTOR(S) : Olivier Isson and Tomas Nordström

Page 1 of 2

It is certified that error appears in the above-identified patent and that said Letters Patent is hereby corrected as shown below:

On the title page item (75) should read:

(75) Inventors: Olivier Isson, La Tronche (FR); Tomas Nordström, Lulea (SE)

Claims 2-6, 8, and 15 should read:

2. The system of claim 1, further comprising:  
a finite impulse response filter having a size adapted for processing samples of the outgoing time domain symbols only during said predetermined time interval, comprising means for continuously calculating filter coefficients from the outgoing time domain signals received and transmitted on the subscriber line.

3. The system of claim 1, wherein the predetermined time interval is equal to a maximum delay between the incoming and outgoing time domain symbols.

4. The system of claim 1, further comprising:  
a FIFO memory receiving the outgoing time domain symbols;  
a subtractor arranged for subtracting the outgoing time domain symbols from output of the FIFO memory;  
a filter receiving output of the subtractor and enabled only during said predetermined time interval from an end of each outgoing time domain symbol; and  
an adder receiving the output of the filter and said incoming time domain symbols.

5. The system of claim 4, wherein the FIFO memory has a size for storing only a beginning portion of each outgoing time domain symbol, is write-enabled during said predetermined time interval from the beginning of each outgoing time domain symbol, and read-enabled during said predetermined time interval from the end of each outgoing time domain symbol.

6. In a digital subscriber line (DSL) transmission system in which at least a first outgoing symbol and a second outgoing symbol are successively transmitted, at least one incoming symbol is received, and an echo of the first outgoing symbol and an echo of the second outgoing symbol are successively received as part of an echo signal, a method comprising an act of:

(A) making sub-carriers of a first portion of the echo signal, the first portion being less than all of the echo signal, orthogonal to sub-carriers of the at least one incoming symbol by replacing a the first portion of the echo of the second outgoing symbol with an estimation of a first portion of the echo of the first outgoing symbol.

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8. The method of claim 7 wherein:  
the first outgoing symbol and the second outgoing symbol have a same total length; and the length of the first portion of the echo of the second outgoing symbol and the first portion of the echo of the first outgoing symbol does not exceed 5% of the total length.

15. In a digital subscriber line (DSL) transmission system in which at least a first outgoing symbol and a second outgoing symbol are successively transmitted, at least one incoming symbol is received, and an echo of the first outgoing symbol and an echo of the second outgoing signal are successively received as part of an echo signal, an apparatus comprising:

a circuit to make sub-carriers of a first portion of the echo signal, the first portion being less than all of the echo signal, orthogonal to sub-carriers of the at least one incoming symbol, the circuit operative to replace a the first portion of the echo of the second outgoing-symbol with an estimation of a first portion of the echo of the first outgoing symbol.

Signed and Sealed this

Twelfth Day of December, 2006

A handwritten signature in black ink, appearing to read "Jon W. Dudas". The signature is stylized with a large, sweeping initial "J" and a distinct "D".

JON W. DUDAS

*Director of the United States Patent and Trademark Office*